Alperen Keleş

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Personal Information

Github: github.com/alpaylan
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Education

Bachelor of Engineering - Computer Engineering (3.68/4.0)   Expected: June 2021
Middle East Technical University, Ankara, Turkey

Relevant Coursework

Discrete Computational Structures, Abstract Machines and Formal Languages, Language Processors, Introduction to Artificial Intelligence, Logic for Computer Science, Computer Aided Formal Verification

Research and Publications

DroPPPP: A P4 Approach to Mitigating DoS Attacks in SDN
The 20th World Conference On Information Security Applications
August 21-24, 2019   Jeju Island, Korea

Protocol Verification Language
IEEE/ACM International Symposium on Code Generation and Optimization Student Research Competition
February 22 - 26, 2020   San Diego, CA, USA

Work Experience

University of Maryland - Maryland Cybersecurity Center(MC2)
- *Research Intern*   July 2020 - Present

- Worked on Automatic Exploit Generation by Automated Detection of Heap Exploitation Primitives using Inductive Program Synthesis techniques.
- Designed a domain-specific language for automatically synthesizing heap allocator implementations.
- Worked on counter-example guided inductive synthesis techniques for generating heap allocator models in the designed language.

Havelsan
- *Candidate Engineer*   July 2020 - Present

- Working on creating showcases for 5G ICT Technologies.
- Designed Peer Assisted Parking(PAP) system for automated parking assistance in smart cities.
- Participated in Ericson Innovation Awards 2020 with Peer Assisted Parking.

Emproof
- *Remote Embedded Security Engineer*   January 2020 - April 2020
- *Embedded Security Engineering Intern*   June 2019 - September 2019

- Worked on translation validation of transformations done by binary obfuscation techniques against reverse engineering practices in embedded software.
- Wrote a lifter from Armv6-M Instruction Set Architecture to an Intermediate Language(IL) of our design.
- Wrote an emulator for the IL mentioned above.
- Worked on Microsoft Research's SMT Solver Z3 for translation validation.

Middle East Technical University
- *C Programming Laboratory Student Assistant*   February 2019 - June 2019

Projects

Protocol Verification Language

-Open Source Domain Specific Language for Network Protocol Verification

- A domain specific programming language for network protocol implementations to be formally verified against their specifications.
- Compiler is written in Rust.
- Program verification is done by a built-in verification engine inside the compiler.
- Project is a finalist of HAVELSAN(Air Electronics Industry) Cyber-Security Acceleration Program as 1 of 8 projects.
- Funded by AdımODTU Undergraduate Research Initiative.
- Falling Walls Ankara Winner
- Falling Walls Finals Participant
- German Innovation Week Participant

Network Intrusion Detection System

-As Part of Guided Research with A Faculty Member

- Analyzed and surveyed publicly available Network Intrusion Data Sets.
- Worked on issues such as high class imbalance with techniques that contain over and under sampling, weight balancing.
- Worked with Python Scikit-Learn and Imblearn Libraries on Decision Trees and Random Forest Models
- Wrote a research paper on the study.

Fact Checker's Tool

-NLP/Graph Approaches Based System for Use of Fact Checking Organizations

- Fact Checker's Tool is a project that uses Twitter user network graph and NLP techniques for helping Fact Checking organizations strengthen their operations.
- Coronathon Turkey Finalist
- Participant of Factory - Incubator Program of Teyit, Fact Checking Organization -

Awards and Achievements

- German Innovation Week Participant
- Falling Walls Finals Participant
- Falling Walls Ankara Winner
- Finalist in Coronathon Turkey with Fact Checker's Tool
- ACM-ICPC SEERC Participant(2018)
  -Took part in the regional contest in Ukraine as a member of one of the 2 teams from METU.
- TUBITAK National Secondary School Research Projects Contest Regional Finals(2015)
- TUBITAK National Secondary School Research Projects Contest Regional Finals(2014)
- TUBITAK National Science Olympiads for Computer Science Regional 3rd Degree(2014)

Programming Languages

C++
Python
C
MATLAB

Languages

Turkish: Native
English: Proficient(TOEFL: 109)

Hobbies

Writing, Debating, Chess and Billiards

Volunteer Experience

IEEE METU Student Branch	
- *Vice Chairperson of Executive Board*	May 2019 - May 2020
- *Editor of Biltek*	May 2018 – May 2019
- *Webmaster*	May 2018 – May 2019
- *Member*	October 2017 – May 2018
ACM METU Student Chapter	
- *Vice President*	October 2017 – Present
BİLMÖK(Computer Engineering Students Congress)	
- *Board Member*	March 2018– March 2020